

REMARKS

In Response to the Office Action dated May 19, 2006, Applicant respectfully requests reconsideration. Claims 1-22 and 51-78 were previously pending in this application. Claims 51-59 are withdrawn. Claims 1-22 and 60-78 stand rejected. Claims 1, 2, 8, 10, 11, 13, 14, 17, 60, 61 and 67 are amended. Claims 19-22 are cancelled, without prejudice. As a result claims 1-18 and 60-78 are pending for examination with claims 1, 14, 60, 67 and 74 being independent claims. No new matter has been added.

In this Response, Applicant's silence with regard to the Examiner's rejections of dependent claims constitutes a recognition by the Applicant that the rejections are moot based on the Remarks relative to the independent claim from which the dependent claims depend. Applicant reserves the option to further prosecute the same or similar claims in the instant or a subsequent application.

The Examiner objected to the drawings indicating the arm in the process position in Fig. 1 should be illustrated as dashed. A new set of formal drawings (sheets 1-20) is attached hereto to replace the informal drawings filed with the application. The arm in the process position in Fig. 1 is now illustrated as dashed.

The Examiner rejected claims 1-6, 10, 12-17, 19-22, 60-64 and 67-70 under 35 U.S.C. §102(b) as being anticipated by Sieradzki (U.S. Patent 5,486,080; referred to hereafter as "Sieradzki"). The Examiner rejected claims 74, 75 and 77 under 35 U.S.C. §102(b) as being anticipated by Tabrizi et al. (U.S. Patent 6,315,512; referred to hereafter as "Tabrizi"). The Examiner rejected claims 7-9, 18, 71 and 72 under 35 U.S.C. §103(a) as being unpatentable over Sieradzki in view of Bowling et al. (U.S. Patent 4,718,975; referred to hereafter as "Bowling"). The Examiner rejected claims 65 and 66 under 35 U.S.C. §103(a) as being unpatentable over Sieradzki in view of Yamaga et al. (U.S. Patent Application Publication 2001/0014267; referred to hereafter as "Yamaga"). The Examiner rejected claim 78 under 35 U.S.C. §103(a) as being unpatentable over Tabrizi. The Examiner rejected claim 76 under 35 U.S.C. §103(a) as being unpatentable over Tabrizi in view of Bowling. The Examiner rejected claims 11 and 73 under 35 U.S.C. §103(a) as being unpatentable over Sieradzki in view of Tabrizi. Applicant disagrees and traverses the rejections.

Applicant's independent claim 1, as amended, recites a method for handling wafers including extending a first arm from a first position for retrieving a first wafer from a storage position, returning the first arm to the first position, transferring the first wafer from the first arm to a second arm at the first position, rotating the second arm about an axis for delivering the first wafer to a processing position for processing to generate a processed wafer, rotating the first arm about the axis for removing the processed wafer from the processing position, rotating the first arm about the axis to return the first arm to the first position, and extending the first arm from the first position for returning the processed wafer to the storage position.

Sieradzki discloses a wafer processing apparatus having two robot arms. As shown in Figs. 3 and 4, the arms are disclosed as having separate rotational axes. In contrast, Applicant's arms rotate about a single axis providing a more compact arrangement for processing the wafers. The single axis further provides for a more direct transfer of wafers between the arms as the arms assume the same position during the transfer. Accordingly, Sieradzki does not anticipate claim 1.

Claims 14 and 60, as amended, recite methods for handling wafers using two arms, wherein the arms have a single axis of rotation feature similar to that of claim 1. Accordingly, Sieradzki does not anticipate claims 14 and 60. Claims 2-13, 15-18 and 61-66 depend from respective claims 1, 14 and 60 and are allowable at least by dependency. Applicant respectfully requests reconsideration in view of the amendments to the claims and allowance of claims 1-18 and 61-66.

Claim 67 recites a method for handling wafers that comprises retrieving a next wafer from a storage position using a first arm, removing a processed wafer from processing using a second arm, delivering the next wafer for processing using the first arm, returning the processed wafer to the storage position using the second arm and iteratively performing the retrieving, removing, delivering and returning while alternating using the first arm and the second arm between iterations. The amendments to claim 67 serve to explicitly state the implied use of the arms. For example, the claim now explicitly recites that the first arm is used to retrieve a next wafer and to deliver the next wafer for processing.

Sieradzki discloses using one arm to retrieve a wafer from storage and return a wafer from a processing position to storage (see steps "a" and "c" in Fig. 4). The second arm delivers the wafer from a transfer position to the processing position (step "b"). Sieradzki does not disclose using one

arm to both retrieve a wafer from a storage position and to deliver the wafer for processing. Nor does Sieradzki disclose alternating using the arms during repeated iterations of the method. Accordingly, Sieradzki does not anticipate claim 67. Claims 68-73 depend from claim 67 and are allowable at least by dependency. Applicant respectfully requests reconsideration in view of the amendments to the claims and allowance of claims 67-73.

Claim 74, as amended, recites a method for handling wafers that comprises retrieving a first wafer from a wafer cassette using a first arm while removing a processed wafer from processing using a second arm, delivering the first wafer for processing, returning the processed wafer to the wafer cassette while processing the first wafer to generate a processed wafer, retrieving a next wafer from the wafer cassette using the second arm while removing the processed wafer from processing using the first arm, delivering the next wafer for processing, returning the processed wafer to the wafer cassette while processing the next wafer to generate a next processed wafer and iteratively performing the retrieving, delivering and returning while alternating using the first arm and the second arm between iterations.

Tabrizi discloses a wafer handling method with two arms. The arms rotate together about a central shaft. A first arm retrieves wafers from a load lock, while the second arm returns processed wafers to the load lock. The two arms rotate and the first arm inserts wafers for processing, while the second arm removes wafers from processing. Applicant, on the other hand, uses the first arm to retrieve a next wafer from a load lock while the second arm removes a processed wafer from processing. The first arm delivers the next wafer for processing and the second arm returns the processed wafer to the load lock. The second arm then retrieves a new wafer from the load lock while the first arm removes the next processed wafer from processing. Thus, in Applicant's method, both arms retrieve and return wafers to the load lock and both arms deliver and retrieve wafers from processing, with the use of the arms alternating between iterations. The two arms in Tabrizi perform the same functions in each iteration and never alternate. Further, since the arms rotate together about the axis, both arms operate at either the load lock or processing station. Thus, Tabrizi cannot operate one arm retrieving a wafer from a load lock, while a second arm removes a wafer from processing, as recited in Applicant's claim 74.

Accordingly, Tabrizi does not anticipate claim 74. Claims 75-78 depend from claim 74 and are allowable at least by dependency. Applicant respectfully requests reconsideration in view of the amendments to the claims and allowance of claims 74-78.

CONCLUSION

In view of the foregoing remarks, reconsideration is respectfully requested. Applicant respectfully suggests that the application is in condition for allowance and a notice to this effect is respectfully requested. If any issues are deemed to remain prior to allowance, Applicant invites the Examiner to contact the Applicant's undersigned Attorney.

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Respectfully submitted,

By 
Robert W. Gauthier

Registration No.: 35,153
FOLEY HOAG LLP
155 Seaport Blvd
Boston, Massachusetts 02210
(617) 832-1175
Attorney for Applicant